

II.

Executive Summary

a. **Title.**—Spawning area of green sturgeon *Acipenser medirostris* in the upper Sacramento River.

Applicant.—U.S. Fish and Wildlife Service, Northern Central Valley Fish and Wildlife Office.

b. **Project Description.**—The goal of this project is to gain a better understanding of green sturgeon life history in the upper Sacramento River. This will aid in the development and implementation of restoration and management actions used to achieve CALFED goals. The primary biological objectives are to: 1) to identify green sturgeon spawning sites and when spawning occurs, 2) evaluate the availability and use of specific sites, and 3) establish baseline habitat needs such as, substrate type, velocity, temperature, and depth. These objectives will be approached with a multi-year study program. The project will utilize an artificial substrate system as described in California Fish and Game (1990) at various locations in the river. The substrate collects the semibouyant-adhesive eggs. Collection of eggs on the mats indicates spawning activity nearby.

c. **Approach.**—Spawning areas will be determined by placing two or more artificial substrate mats in about a dozen locations between Red Bluff Diversion Dam (RBDD) and Anderson-Cottonwood Irrigation Diversion (ACID). Periodic examination of the substrate mats will determine if spawning is taking place in the vicinity. Funding for this project would include fabrication of the substrate mats, mat placement, and periodic examination of the mats for eggs. Some mats will be borrowed from California Department of Fish and Game (CDFG) in Stockton. Additional mats will be built as replace those lost due to high flows.

Schedule.—The first year field activities would occur during the spawning period beginning mid-April FY '99 and ending mid-July. Mats would be retrieved and examined one to two times weekly. Results for the first year field activities will be available in a progress report at the end of the season.

d. **Justification for Project Funding by CALFED.**—Observations of adult green sturgeon at RBDD after dam gates are lowered in the spring suggest spawning takes place nearby. Numerous sightings of adult green sturgeon have been noted in a 10-mile stretch below RBDD (Moyle, P. B., R. M. Yoshiyama, J. E. Williams, E. D. Wikramanayake 1995). Additionally, eight yearling-size green sturgeon were collected upstream from RBDD in October of 1990 and 1991 (Kurt Brown, U.S. Fish and Wildlife Service, Red Bluff, California, personal communication). This suggests spawning has occurred upstream of RBDD. This was confirmed with the capture of larval sturgeon in rotary-screw traps at RBDD over the past three years. Green sturgeon are identified as a species of special concern by CDFG and a species of concern by the U. S. Fish and Wildlife Service (Service). Current operations at RBDD allow adult green sturgeon to migrate past Red Bluff and successfully spawn upstream. Documenting spawning of

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green sturgeon above RBDD not only extends the previously known range, it provides opportunity to apply programs for restoration of the species.

- e. **Budget Costs.**—Project costs for the first-year field activities include fabrication of the mats and salaries. Costs from mid-April to mid-July FY '99 are \$60,801. Costs for subsequent years are \$54,000, which includes fabrication for replacement mats and salaries. Costs assume the use of existing vehicles and boat. This project would be multi-year and would continue until spawning areas are located or as long as data is needed by managers or researchers working within the Sacramento River Ecological Zone.

Third party Impacts.—No third party impacts will occur during the project.

- f. **Applicant Qualifications.**—The Northern Central Valley Fish and Wildlife Office (NCVFWO) was established in 1978 as part of the Service's responsibility to facilitate restoration of Pacific salmonids. The construction and operation of dams and water diversion projects and the subsequent degradation and loss of habitat have been the primary contributors to the decline in all anadromous fishes in the upper Sacramento River. Specific goals of the NCVFWO are to: 1) Stabilize or increase the runs of anadromous fishes in the Sacramento River system, 2) Improve the effectiveness of federal fish propagation facilities in California, 3) Protect and restore the productivity of natural habitats in the Sacramento River system, and 4) Continue development of information and strategies for protecting the natural habitats of the Sacramento River system as migration routes, spawning areas, and nursery areas for anadromous fishes. Since the enactment of the CVPIA the NCVFWO has participated in a number of technical teams to develop the Anadromous Fisheries Restoration Plan (AFRP). Our office participated on the sturgeon technical team comprised of individuals from state and federal agencies and universities that developed a list of restoration needs for white and green sturgeon.

- g. **Monitoring and Data Evaluation.**—Data from this project will identify specific areas utilized for spawning and early life history information. These areas and their subsequent monitoring will coordinate with other existing sturgeon restoration programs. Peer review of reports will occur within the service, CDFG, and members of the sturgeon technical team.

- h. **Local Support/Coordination with other Programs/Compatibility with CALFED Objectives.**—This project is consistent with current restoration planning efforts identified in: Central Valley Project Improvement Act - Plan of Action for the Central Valley Anadromous Fish Restoration Program, and Working Paper on restoration needs: habitat restoration actions to double natural production of anadromous fish in the Central Valley of California. Volume 1, 2, and 3. Information from the project will be exchanged for information gathered by researchers at University of California Davis pertaining to green sturgeon bioenergetics, physiology, genetics, and reproductive requirements.